USER AUTHENTICATION METHOD AND USER AUTHENTICATION SERVER

BACKGROUND OF THE INVENTION

[0001] The present invention relates generally to a user authentication and charging for a service in an information providing system especially suitable for mobile information terminals.

[0002] Recently, mobile phones having the Internet connection capability has been rapidly gaining in popularity, which in turn rapidly increasing Internet sites for providing various kinds of services such as information provision. Some pieces of the provided information are free of charge, while the others are chargeable, and the latter case happens more often than the former case. The chargeable information provision requires user authentication every time each user receives a particular service and, at the same time, a predetermined charging system is required.

[0003] In the currently popular information providing services for mobile phones, each mobile phone company operates both as carrier (a communication common carrier) and Internet service provider to enable a comparatively simple user authentication procedure based on the use of the subscriber number and password of each mobile phone. For a charging method, so-called carrier charging is employed in which the service usage fee is collected along with the telephone usage fee. These user authentication and charging methods are dependent on Internet connection providers, which is realized on the premise that each Internet connection provider be a carrier.

[0004] The mobile phone is originally intended for voice talk. Therefore, the resolution and color bits of its display screen, the storage capacity, and the processing performance do not reach those of a mobile information terminal, which is called a PDA (Personal Digital Assistant). The mobile information terminal is also capable of accessing the Internet via its communication device such as a mobile phone, thereby providing usefulness higher than the mobile phone through various kinds of capabilities such as personal information management, schedule management, memo management, and electronic mail transfer and a relatively large-sized display screen without scarifying the PDA's mobility.

[0005] When performing the information providing services on the Internet for mobile information terminals such as mentioned above, it is inappropriate to use the subscriber number for user authentication because the user of each mobile information terminal does not always use a same communication device (for example, a mobile phone) to access the Internet.

[0006] Instead of the subscriber number, a user ID may be used for user authentication. However, it would take much time and labor for each user to enter his user ID every time he uses a service from an information providing site (IP site) for example. Especially, with mobile information terminals based on a hand-drawn character recognition technique in which characters must be normally inputted with a stylus (or so-called pen) rather than a keyboard or on a software keyboard in which characters are inputted by pen touch operation, it would take much time and labor for the user to input his user ID and other characters. If this inconvenience makes users of mobile information terminals hesitate to use the services provided by information providing sites, it would be a loss to these sites. In addition, if these mobile information terminals are not dependent on Internet connection providers, or carriers, each user ID must be transferred over the Internet, which is an open network incapable of assuring the confidentiality of transferred data, thereby posing a risk in security.

SUMMARY OF THE INVENTION

[0007] It is therefore an object of the present invention to provide a user authentication method for the information provision services suitable for mobile information terminals which minimizes the time and labor of each user in executing user authentication while considering its security.

[0008] In carrying out the invention and according to one aspect thereof, there is provided a user authentication method for an authentication server which executes user authentication between a mobile information terminal and a content providing server interconnected by an open network not guaranteeing the security of data to be transferred, comprising the steps of: registering unique identification information stored in the mobile information terminal with a customer database of the authentication server in advance; decoding the unique identification information encrypted by a predetermined encryption algorithm and supplied from the mobile information terminal via the open network; determining whether the unique identification information decoded in the decoding step is registered with the customer database; and sending a notification to the content providing server that starting of service provision for the mobile information terminal be permitted, if the unique identification information is found registered with the customer database in the determining step.

[0009] In carrying out the invention and according to another aspect thereof, there is provided a user authentication server which executes user authentication between a mobile information terminal and a content providing server interconnected by an open network not guaranteeing the security of data to be transferred, comprising: registering means for registering unique identification information stored in the mobile information terminal with a customer database of the authentication server in advance; decoding means for decoding the unique identification information encrypted by a predetermined encryption algorithm and supplied from the mobile information terminal via the open network; determining means for determining whether the unique identification information decoded by the decoding means is registered with the customer database; and service permission notice sending means for sending a notification to the content providing server that starting of service provision for the mobile information terminal be permitted, if the unique identification information is found registered with the customer database by the determining means.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] These and other objects of the invention will be seen by reference to the description, taken in connection with the accompanying drawing, in which:

[0011] **FIG. 1** is schematic diagram illustrating an exemplary configuration of an information providing service system in its entirety practiced as a first embodiment of the invention;